



UNITED STATES PATENT AND TRADEMARK OFFICE

MAILED
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,494	06/20/2003	Hideki Iwaki	10873.1238US01	1705
23552	7590	03/12/2004	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			SOUW, BERNARD E	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/609,494	IWAKI ET AL.	
	Examiner	Art Unit	
	Bernard E Souw	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 20 June 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-17 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 20 June 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09/24/2003</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-6, 8-11, 14 and 15 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Hirabayashi et al. (USPAT Appl. Pub. 2002/0076161 A1).

Hirabayashi et al. disclose in Fig.1A-D a light reception/emission device built-in module with optical and electrical wiring (1-5) combined therein,, comprising an optical waveguide layer comprising a core portion 1-2 and a cladding portion 1-10; a first and second wiring patterns 1-5 (both sides of trench 1-3) on the main surface of the optical waveguide layer 1-10 (Fig.1C), as recited in the Abstract and in Sect.[0166]; a light reception device 1-4 disposed inside the optical waveguide layer (trench 1-3), the light reception device 1-4 (recited in line 13 Sect.[0166]) being electrically connected with the first wiring pattern 1-5 and optically connected with the core portion 1-2 of the waveguide layer, as most clearly shown in Fig.1B; and a light emission device (also 1-4, recited in line 12 Sect.[0166]) disposed inside the optical waveguide layer (trench 1-3), the light emission device 1-4 being electrically connected with the core portion 1-2 of the waveguide layer and with the first wiring pattern 1-5, as clearly shown in Fig.1B.

- ▶ The limitation of claim 2, that the optical input and output of the light emission device 1-4 are conducted in a direction parallel to the plane of the optical waveguide is inherent in Hirabayashi's, as is obvious in Fig.1A-C and recited in Sect.[0168] lines 6-8.
- ▶ Regarding claim 3, Hirabayashi's light emission device includes a surface emission type laser, as specifically recited in line 12 Sect.[0166].
- ▶ Regarding claims 4 and 15, the limitation that the end face of the core portion of the optical waveguide is optically connected with the light reception device 1-4 via a light-transmitting material is inherent in Hirabayashi's, as specifically recited in Sect.[0168], lines 2-4. That Hirabayashi's light-transmitting material is a resin that conventionally need curing is well known in the art, specifically fiber optic and optical

waveguide devices, as recited by Hirabayashi in Sect.[0200] lines 1-3, in reference to Fig.5B, and further supported by Lemaire et al. (USPAT 6,574,408) in Col.6/l.l.35-40, reciting a hole 9 made through the metal plate 9 being filled with resin, which corresponds to filling a hole in Hirabayashi's metal layer 1-5 in Fig.1A-C.

- ▶ Still regarding claim 15, the limitation of a through hole in the optical waveguide layer is the same as a cut in the optical waveguide layer, i.e., forming a trench 1-3 in Fig.1A-C.
- ▶ Regarding claim 5, Hirabayashi's device is facilitated with a third wiring pattern 1-6 and 1-7, as shown in Fig.1D and recited in Sect.[0172].
- ▶ Regarding claim 6, Hirabayashi's third wiring pattern is packaged with a circuit component, as recited in Sect.[0324] to [0330] and shown in Fig.23A-C and Fig.24A-B.
- ▶ Regarding claims 8-11, Hirabayashi's waveguide layer is made of a plurality of core portions, as shown in Fig.1A-D by two rows of core portions 1-2, one on each side of the trench 1-3, with many more than just three end faces of the end faces of the plurality of core portions are disposed on the same plane, and not just three but at least four end faces of the end faces of the plurality of core portions are disposed on the same line (each core portion 1-2 in Fig.1A-D has four end faces (of end faces) staying on a straight line).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al..

Hirabayashi et al. show all the limitations of claim 12, as previously applied to their parent claim 1, except the recitation of a plurality optical waveguide layers.

Although Hirabayashi et al. did not disclose a plurality of optical waveguide layers, the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al. in view of Lemaire et al. (USPAT 6,574,408).

Hirabayashi et al. show all the limitations of claim 7, as previously applied to the parent claim 1, except the limitation of an insulation board made of a mixture containing an inorganic filler and a thermosetting resin on at least one side of the optical waveguide layer.

Hirabayashi's insulation board 11-1-2 in Fig.16A-D is made of glass, as recited in Sect. 290 lines 4-6, which conventionally may be substituted with resin, as is well known in the art, as used by Hirabayashi in Fig. 5B, and recited in Sect.[0200] lines 1-3. Further support for substituting transparent materials in fiber optic and optical waveguide devices with resin is here provided by Lemaire et al. in Col.6/II.35-40, as

Art Unit: 2881

recited previously. Thus, both Hirabayashi et al. as well as Lemaire et al. disclose the claimed invention except for an insulation board made of a mixture containing an inorganic filler and an optical waveguide layer made of a thermosetting resin. However, since applicant has not disclosed that the use of the claimed transparent materials solves any stated problem or has any particular purpose, and it appears that the invention would perform equally well with Hirabayashi's and/or Lemaire's transparent resin as transparent filler material, then the two recited prior arts makes the claim.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al., as applied to claim 12 above, in view of Sakai et al. (USPAT 5,465,315).

Hirabayashi et al. show all the limitations of claim 13, as previously applied to the parent claim 1, except the limitation that the end faces of the core portions of the plurality of optical waveguide layer have a concave or convex form. Sakai et al. disclose in fig.18A through 18C how to use and make a convex or concave shape of an optical fiber plurality (=bundle) 330 to match the pitches of the optical fibers 331 of an array shown in Fig.16.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the end faces of the core portions of a plurality of optical fiber bundle convex or concave to match the end faces of another fiber array, in order to have an enlargement of viewing angle in case of an image transfer between the two fiber bundles, as taught by Sakai et al. in Col.12/ll.9-25.

9. Claims 6, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al. in view of Oda et al. (USPAT 6,477,284).

► Regarding claim 6, Hirabayashi et al. disclose all the claim limitations, except the recitation of circuit component(s) being packaged on the third wiring pattern 1-6 and 1-7 shown in Fig.1D and recited in Sect.[0172]. Oda et al. disclose in Fig.1 besides optical waveguide 6,7 and laser diode 8 also circuit components 10 (driver silicon LSI) and 12 (control silicon LSI) in the package including or as a modification of Hirabayashi's third wiring pattern, as recited in Col.7/II.40-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate circuit components into the package as a modification of Hirabayashi's third wiring pattern, since such an integrated circuit pattern is desirable for its superior operational stability.

► Specifically regarding claim 16, the inclusion of an optical amplifier device into an integrated circuit of Hirabayashi's as modified by Oda's, i.e., prior to light reception/detection, is conventional and also well known in the art, and hence, unpatentable. Support for the conventional use of optical amplifiers in integrated optics is provided by DeCusatis et al. (USPAT Appl. Pub. 2003/0002138 A1) as recited in Sect.[0006] for erbium-doped fiber amplifier, and in Sect.[0035]-[0042] for a Raman effect amplification device 170 as shown in Fig.8.

► Specifically regarding claim 17, Oda's light emission device 8 (laser diode) is connected with the driving device 10 via electrical wiring pattern 11, and a conventional

optical amplification device is normally connected with the light receiving device via a separate wiring pattern, in order to avoid interference caused by electric as well as light pulses.

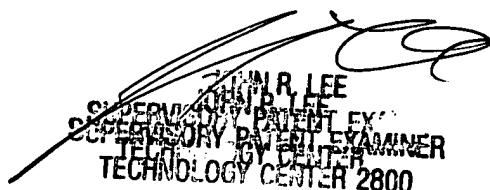
Communications

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw whose telephone number is 571 272 2482. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571 272 2477. The central fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications as well as for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

bes
February 27, 2004


JOHN R. LEE
CBERWICK, PATENT EXAMINER
EXERCISORY DIVISION
TECHNOLOGY CENTER 2800